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**WK1**

**Building Batteries with Extended Longevity for Implantable Medical Devices**

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Implanted medical devices serve patients in a range of therapy areas, such as cardiac rhythm management, spinal cord stimulation for pain management, deep brain stimulation for movement disorders, and sacral nerve stimulation for bladder control. A persistent challenge facing this industry is the need to extend device longevity while offering smaller devices with more complex features. Focusing on batteries for implanted devices, this talk will present approaches for designing, testing, and modeling performance for device lifetimes exceeding a decade. An important part of this process is gaining a fundamental understanding of underlying ageing mechanisms. Specific examples will be cited from state-of-the-art primary and rechargeable battery technologies where mechanistic understanding has been crucial for advancements. Areas where use of advanced characterization techniques may be beneficial to meet the future goals of the industry will be discussed.